

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) A method for generating image data for a document, comprising:

receiving input text data indicating text of a document in a first human-readable language;

performing a translation operation using the input text data to produce translation data indicating a second human-readable language translation of the first human-readable language;

encoding the translation data in a machine-readable code, wherein the machine-readable code is not human-readable when rendered; and

merging the input text data with the machine-readable code to produce merged image data.

2. (Currently Amended) The method of claim 1 further comprising the step of rendering, via an electronic image generating device, the merged image data on a hardcopy document, wherein the machine-readable code is on the document in a fixed constant displayed manner.

3. (Currently Amended) The method of claim 1, wherein the machine-readable code is a self clocking glyph shape code, which include a plurality of glyphs;
the glyphs are elongated slash-like marks;
the glyphs are written on a generally regular rectangular lattice of centers;
and
the glyphs are tilted either left or right with respect to the longitudinal dimension of the recording medium in order to encode binary ones and zeros.

4. (Previously Presented) The method of claim 1 wherein the merging step further comprises the step of superimposing the machine-readable code over the input text data.

5. (Currently Amended) A method for converting a document from a first language into a second language comprising the steps of:

receiving, via an electronic device, image data indicating a document,
wherein said document, when rendered, comprises human-readable text written in a first language; said image data including language translation data encoded, via an encoding module, in binary machine-readable code embedded in said image data such that when said document is rendered, the encoded language translation data is both rendered on the document and not human-readable when said document is rendered;

receiving selection data indicating a selected foreign language for translation of said human-readable text written in the first language; and

producing, via a decoding module, a human-readable translation of said document in said selected foreign language using the language translation data encoded in said machine-readable code.

6. (Previously Presented) The method of claim 5, wherein said machine-readable code is a self clocking glyph shape code.

7. (Currently Amended) The method of claim 5 wherein the step of receiving image data further comprises the step of performing OCR optical character recognition of the human-readable text.

8. (Currently Amended) The method of claim 7 further comprising the step of utilizing an assist channel to perform an OCR optical character recognition operation on the human-readable text, wherein the assist channel encodes information that assists in the identification of failures of the OCR optical character recognition operation; the assist channel being included in the language translation data by use of the electronic device, which is an optical character recognition device.

9. (Currently Amended) The method of claim 5 wherein the language translation data encoded in said machine-readable code includes language translation data for a plurality of foreign languages; and wherein the step of producing the human-readable translation further comprises the steps of:

identifying a portion of the machine-readable code in the image data data representing the document that corresponds to the selected foreign language; and
decoding the identified portion of the machine-readable code.

10. (Previously Presented) The method of claim 9 wherein said decoding step is further comprised of steps of:

translating the human-readable text into the human-readable translation of said selected foreign language; and

improving the human-readable translation of said selected foreign language using the identified portion of the machine-readable code.

11. (Previously Presented) The method of claim 5 wherein the language translation data encoded in the machine-readable code is a complete human-readable translation of the human-readable text in a compressed form; and wherein producing the human-readable translation of said document in said selected foreign language using the language translation data encoded in said machine-readable code includes performing a decompression operation on the language translation data.

12. (Previously Presented) The method of claim 5 wherein the language translation data encoded in the machine-readable code includes a plurality of editing operations; and

wherein producing the human-readable translation of said document in said selected foreign language using the language translation data encoded in said machine-readable code includes performing a machine translation operation of the human-readable text to perform a first translation; and performing the plurality of editing operations on the first translation to produce the human-readable translation of said document in said selected foreign language.

13. (Previously Presented) The method of claim 5 wherein the language translation data encoded in the machine-readable code includes a correction code indicating correct word usage in the selected foreign language; and

wherein producing the human-readable translation of said document in said selected foreign language using the language translation data encoded in said machine-readable code includes performing a dictionary look-up operation of the human-readable text to perform a first word-for word translation; and performing at least one editing operation on the first word-for word translation using the correction code to produce the human-readable translation of said document in said selected foreign language.

14. (Currently Amended) A method for generating image data for an output document, comprising:

receiving input text data indicating text of a document in a first human-readable language;

for each one of a plurality of output foreign languages, performing a language translation operation using the input text data to produce a set of language translation data; each set of language translation data indicating sufficient information for a compatible document image decoder to produce a translation of the first human-readable language into a second human-readable language;

encoding each set of the language translation data in a machine-readable code segment, wherein the machine-readable code segment is recorded by elongated slash-like marks written on a generally regular lattice of centers in a glyph mark that is not human-readable when rendered as image data in the output document;

producing primary channel image data representing the input text data in the first human-readable language; the primary channel image data presenting the input text data as human-readable text when rendered as image data in the output document; and

merging the primary channel image data with the plurality of machine-readable code segments to produce merged document image data.

15. (Previously Presented) The method of claim 14 for generating image data for an output document wherein the language translation operation performs a complete translation of the first human-readable language into the second human-readable language; and wherein the language translation data is a compressed version of the complete translation.

16. (Previously Presented) The method of claim 14 for generating image data for an output document wherein the language translation data produced by the language translation operation is editing data to be used for input to a set of post-translation editing operations; the set of post-translation editing operations to be applied after the compatible document image decoder performs a machine translation of the first human-readable language into the second human-readable language.

17. (Previously Presented) The method of claim 14 for generating image data for an output document wherein the language translation data produced by the language translation operation is correction data to be used to correct word translation errors output by the compatible document image decoder after performing a dictionary-based word-for-word translation of the first human-readable language into the second human-readable language.

18. (New) The method according to claim 5, further comprising, wherein the encoded language translation data represents a correction code C that describes a set of editing functions E that are applied to the text, which is human readable text P, of the document having the first language, to convert the text P from the first language into the second language, wherein for each page of the text P in the first language, there is an accurate translation ATL into the second language L;

wherein a processing routine RL, is applied to each page of the text P in the first language to produce the translation of the text P into the second language L, the quality of the translation RL(P) being on a continuum from very good to very bad;

wherein the code C is computed such that:

$$ATL=E(C, RL(P)) ,$$

and the code C is transmitted as glyphs on the page containing the text P;

and

wherein multilingual encoding and decoding modules reconstruct the accurate translation ATL by optical character recognition processing of the text P,

applying the processing routine RL to the translation result, and then correcting the translation result according to instructions of the code C.

19. (New) The method according to claim 18 further including:
using a Machine Translation MT capability to produce a translation by optical character recognition processing of the text of the document in the first language; and

after applying the Machine Translation MT to the text P, the steps of C and E performing additional processing to improve readability of the text P, wherein the code C contains the operations that the editing functions E perform to produce the ATL, including performing disambiguation by framing a series of questions to a person fluent with the first language, and using by the translation software answers to the questions to make choices of word sense and sentence patterns in the second language, the code C recording the answers to the series of questions so the fluent person's knowledge is available for guidance when a translation is undertaken.

20. (New) The method according to claim 19 wherein in addition to providing the correction code C, further including secondary information that also encodes information that describes at least one of,

(i)an encoding scheme, (ii)a compression algorithm, (iii) settings such as one of a font identifier, error correction data, or codes for characters,(iv) datasets, and (v) hints that are used to translate the text of the document.

21. (New) The method of claim 14, wherein:

each of the elongated slash-like marks written on a generally regular lattice of centers of the glyph mark are 4 pixel by 4 pixel to 7 pixel by 7 pixel representations when rendered on the output document; and

the rendered elongated slash-like marks are not easily resolved by the unaided human eye under standard lighting conditions and reading distances so as to give the glyph mark a uniform gray scale appearance.